SCIENTIFIC AMERICAN.

THE ADVOCATE OF INDUSTRY AND ENTERPRISE, AND JOURNAL OF MECHANICAL AND OTHER IMPROVEMENTS.

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THE SCIENTIFIC AMERICA

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(The Principal Office being at New York,)

By RUFUS PORTER.

Each number of this paper is furnished with from two to five ORIGINAL ENGRAVINGS, many of them elegant, and illustrative of NEW INVENTIONS, SCIENTIFIC PRINCIPLES, and CURIOSITIES; and contains as much Interesting Intelligence as six ordinary daily papers, consisting of notices of the progress of Mechanical and other Scientific Improvements,—American and Foreign Inventions Catalogues of American Patents,—Scientific Essays, illustrative of the principles of the Sciences of MECHANICS, CHEMISTRY, and ARCHITECTURE;—Instruction in various Arts and Trades;—Curious Philosophical Expements;—Miscellaneous Intelligence, Poetry and, occasionally, Music.

TERMS.—"The Scientific American" will be furnished to subscribers at $2, per annum,—one dollar in advance.

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Any person procuring four or more subscribers, will be entitled to a commission of twenty-five cents each.

TERMS OF ADVERTISING.—For 10 lines, or less, 50 cents for the first, and 12 1-2 cents for every subsequent insertion.

Alphabet of Short Rules.

[We found the following in an exchange; and finding it to be excellent poetry, with the exception of rhyme and measure, we have ventured to make a small addition to each line, by way of improvement.]

Attend well to your business—honest man:
Be punctual in your payments—when you can;
Consider well before you promise—strong:
Dare to do right—the opposite is wrong:
Envy no man—nor aught against him say;
Faithfully perform your duty—every day;
Go not in the path of vice—but rather dread it;
Have respect for your character—and credit;
Infringe on no one's right—rather protect it;
Know thyself—important; don't neglect it;
Lie not, for any considerat'on—of this beware;
Make few acquaintances—unless you've time to spare:
Never profess what you do not practice—no;
Occupy your time in usefulness—where e'er you go;
Postpone nothing that you can do now—as well;
Quarrel not with your neighbor—but all anger quell;
Recompense every man for his labor—correctly;
Save something against a day of trouble—directly;
Treat every body with kindness—in your dealings;
Use yourself to moderation—under excited feelings;
Vilify no person's reputation—'tis worse than pelf;
Watchfully guard against idleness—yourself;
'Xamine your conduct daily—and amend;
Yield to superior judgment—of an elder friend;
Zealously pursue the right path—to the end.

Farmers in 1776.

Man to the plow,
Wife to the cow,
Girl to the yarn,
Boy to the barn,
And all dues were netted.

FARMERS IN 1837.

Man a mere show,
Girl, piano,
Wife, silk and satin,
Boy, Greek and Latin,
And all hands gazetted.

FARMERS IN 1846.

Men all in debt,
Wives in a pet,
Boys mere muscles,
Girls, snuff and bustles,
And every body cheated.

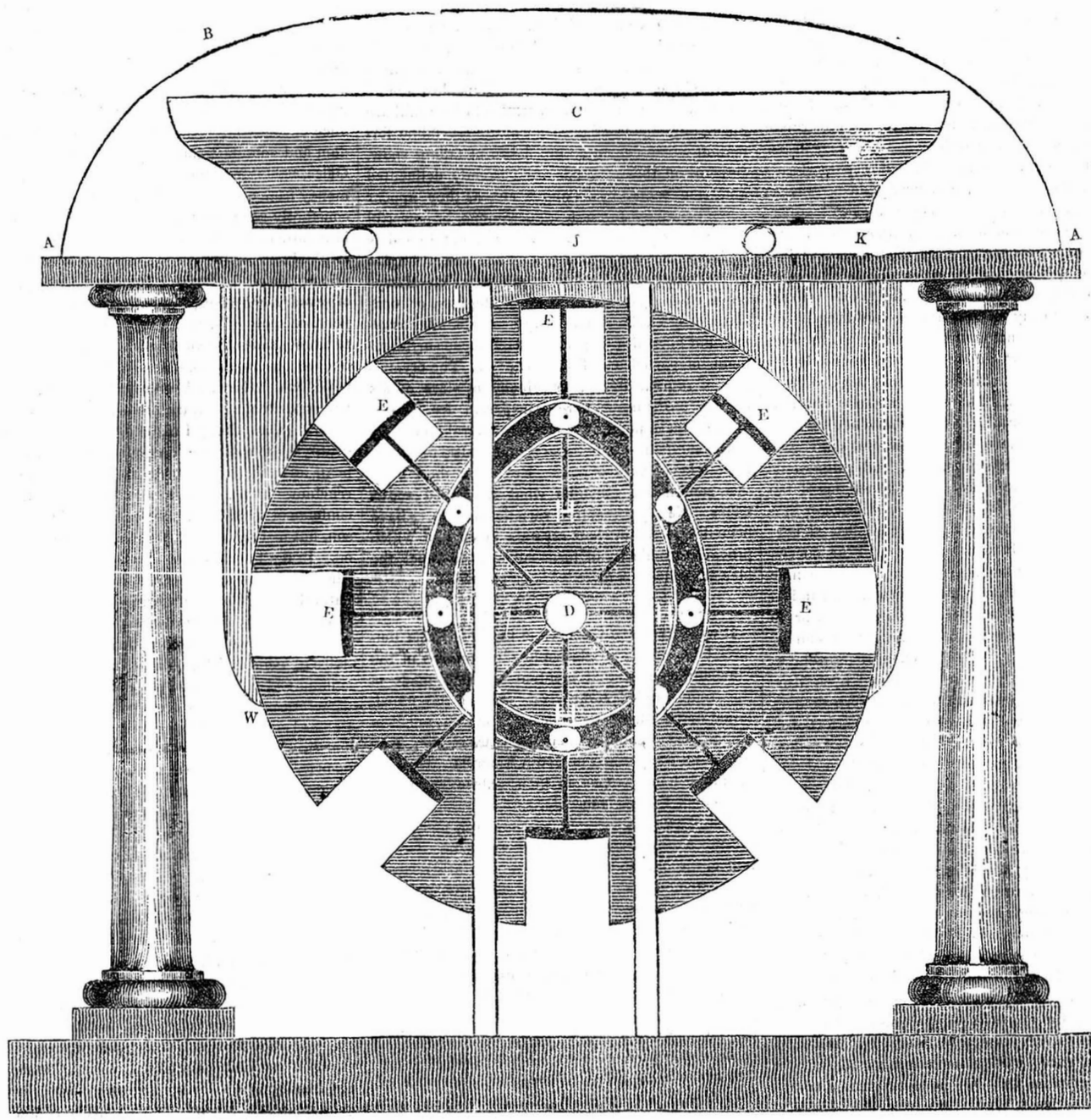
LIFE SAVED BY DRUNKENNESS.—The Paulding, (Miss.) Clarion gives us a real instance where rum drinking was the cause of saving a life. Several years ago, a Creek was tried in Hancock county, for the murder of another Creek. During the progress of the trial, the Sheriff got so drunk that the Judge ordered him into custody, and so found himself without an officer. The jury returned a verdict of guilty, and his honor was in a predicament. There was no Sheriff, and he doubted his power to appoint one *pro tem.*—and to save embarrassment, a new trial was granted. The prisoner remained in jail two years, and being put on trial again at the recent term of the Court, has been acquitted. The Clarion says he is probably innocent of the murder, but he would assuredly have been hung if the Sheriff kept sober!

CHEAP PAINT.—The Ontario Farmer gives the following recipe for a cheap paint He says he has tried it on brick and finds it well calculated to preserve them, and prefers it to oil paint. He says, also, that it will last longer on rough siding of wood than oil paint will on planed siding or boards.

Take one bushel of unslacked lime and slack it with cold water; when slacked, add 50 lbs. of Spanish whiting, 17 lbs. of salt and 13 lbs. of sugar. Strain the mixture through a wire sieve and it will be fit for use, after reducing with cold water. In order to give it a good color, three coats are necessary on brick, and two on wood. It may be laid on with a brush similar to whitewash. Each coat must have sufficient time to dry before the next is applied.

A person being told that a Mr. Smith wished to speak with him, declared he knew no man of that name.

ICE-MAKING MACHINE.



THEORY.—It is an established point, as we have heretofore mentioned, that water, when placed in perfect vacuum, will spontaneously boil until it freezes; in other words, pure water will boil at any temperature below the freezing point, when totally relieved from atmospheric and other pressure; and the vapor produced by the ebulition, carries off the caloric from the water till the remaining water becomes congealed to ice. This fact has been recently established by experiments with the common air pump and receiver: but as this experiment can be applied only to very small quantities, the machine here represented has been invented for the purpose of producing ice in sufficient quantity for convenience.

EXPLANATION.—This is a sectional view of a rotary air-pump surmounted by a receiver or vacuum chamber, containing a basin of water. A circular metalic plate, A A, is well planished near the periphery, where it comes in contact with the convex top or lid, B, which is made of glass or copper, and fitted air-tight to the plate. A metalic basin, C, is placed within the receiver and filled two-thirds full of water: the basin being elevated half an inch from the plate, to allow a free circulation between. The rotary pump is mounted on an axle, D, and is occasionally turned by a crank, (not represented in the cut.) Eight or more cylindrical chambers in the periphery of the wheel, are fitted with pistons, E E, &c., to which are attached piston rods which extend towards the centre, passing through guides at H, whereby they are kept in the right position. A small friction-wheel is attached by a pivot to the side of each piston rod, about midway from the piston to the opposite end of the rod; and these friction wheels, or rollers play in an eliptical groove; and the sides of this groove being stationary, guide the wheels in an eliptical circuit during their progress round the centre; and by this influence and constraint on the wheels, each piston is drawn from the periphery towards the centre, and again returned to the periphery during each revolution of the pump. From J to K a narrow slot is made vertically through the plate, and extends down to the periphery of the pump: so that when the pistons are drawn towards the centre, the expanding air from the receiver falls into the cavities, and is thus carried beyond the termination of the slot at the point I, and thus prevented from returning to the receiver; the casing being fitted air tight to the periphery, and covering the calibres of the small chambers. A groove is made in the opposite casing from L to M for the escape of the air from the chambers as the pistons approach the periphery. When the air is exhausted from the receiver a vapor will rise from the water, and will fall by its own gravity into the chambers, so that by the motion of the pump, the vacuum is maintained and the water becomes frozen in from one to three minutes, according to its quantity.

ADMIRAL WAGER, of the British navy began his career upon the ocean, as an apprentice to an honest old Quaker, Cap. Hull, of Newport, Rhode Island. On the first serious trial of his mettle, he gave proof of those qualities so essential to a seaman, and especially an officer—coolness and courage.—His master's ship, commanded by his master, was approached by a piratical schooner full of men, thirsting for spoils and for blood. Capt. Hull's Quakerism would not allow him to defend himself or his vessel—but young Wager was no Quaker. and determined the guilt of his blood should not, if he could help it be on the pirate's heads. After a good deal of earnest entreaty, and a little respectable force, he got the good captain into the cabin, and accidentally fastened him in. Taking command of the ship, he made hasty but efficient preparations to run over the pirate. Hull watched his movements with interest; and, looking out from the companion way and perceiving the object of young Wager, could not help observing to him—'Charles, if thee intends to run over that schooner, thee must put the helm a little more to the starboard.' Charles observed the direction of the Quaker. The ship passed directly over the schooner, which sunk instantly, and every pirate perished. This exploit procured for Charles a commission in the British Navy, and thus laid the foundation of his fame and fortune.—*Exeter News Letter.*

A sword for Gen. Taylor is being subscribed for by the merchants of Charleston, S. C.

PREPARING FOR A FLOGGING.—George S—— having offended his father, was ordered to prepare himself for a flogging the next morning. George retired, and the next morning, bright and early, appeared before his father, to undergo the execution of his sentence. 'Take off your coat, George,' was the stern command. Off went the coat, and the father standing with a well prepared hickory in his hand observed that his son's back, from one extremity to the other, appeared unusually protuberant. 'What have you got on your back?' said he. 'My jacket," replied the boy. 'Well, what have you got under it?' demanded the father. 'A leather apron four double,' replied the lad. 'A leather apron, have you indeed, and what's that for?' 'Why, pa,' said the youngster, with a grave countenance, 'you told me to prepare for a flogging, and I got as well prepared as I could.' The angry father turned away to hide a laugh, and the boy escaped a flogging by being so well prepared for it.

SILENT BUT ELOQUENT.—In the dreadful earthquake which destroyed the city of Caraccas, in 1812, with forty thousand inhabitants, the clock of the cathedral was stopped, it is supposed, by the first shock. The tower in which the dials are placed, one fronting each quarter of the heavens, remained standing: although the clock has been repaired and set going again, one of these dials and its hands have never been disturbed. They still point to the hour and the minute which heralded so many thousand souls, without a single moment's warning, into eternity.

INSOLENCE REBUKED.—Beaumarchais, the author of the "Marriage of Figaro,' was the son of a Parisian watch-maker, but raised himself to fame, wealth, and rank, by the mere force of his talents. A young nobleman, envious of his reputation, once undertook to wound his vanity and pride by an allusion to his humble origin—handing him his watch and saying, 'Examine it, sir, it does not keep time well; pray ascertain the cause.' Beaumarchais extended his hand awkwardly, as if to receive the watch, but contrived to let it fall on the pavement. 'You see, my dear sir,' replied he, 'you have applied to the wrong person, my father always declared that I was too awkward to be a watchmaker!'

A MILD REPROOF.—To a young Infidel who was scoffing at Christianity, because of the misconduct of its professors, the late Dr. Mason said, 'Did you ever know an uproar to be made because an infidel went astray from the path of morality?' The infidel admitted that he had not. 'Then don't you see,' said Dr. Mason, 'that by expecting the professor of Christianity to be holy, you pay it the highest compliment in your power?' The young man was silent.

SHELL LAC, a valuable substance in the arts, is the product of a female insect in the East Indies. It bores through the bark, when the sap flows and buries the insect—till worms are formed, which pierce the way, leaving their skins, which drying, forms Lac; this is removed from the twigs for use.

CATALOGUE OF AMERICAN PATENTS ISSUED DECEMBER, 1845.

(Continued from No. 15.)

To James Robb, Lewiston, Pa., bee hive: December 31.

To Aaron Colton, Pittsfield, Vt., bee hive: December 31.

To Thomas D. Burrall, Geneva, N. Y., cornsheller: Dec. 6.

To Allen Eldred, Genheim, N. Y., cultivator: December 20

To Jonathan Ball, New York, machine for riveting pipes: Dec. 20.

To S. G. Reynolds, R. I., machine for heading and pointing pins.

To Daniel Newton, Louisville, Ky., machine for double-seaming tin ware: Dec. 20; ante-dated July 7th.

To John J. Howe, Derby, Ct., machine for beating and cleaning wire: Dec. 26.

To Theodore Ely, New York, cotton roller gin: December 11.

To R. P. Cunningham. Abington, Ct., operating shuttels of looms: Dec. 16.

To W. Y. Singleton, Springfield, Ill., waterproof cement: Dec. 26.

C. S. Edwards, Rushville, Ind., mode of preserving potatoes: Dec. 31.

Ebenezer Barrow, New York, air-heating furnaces: Dec. 11.

Wm. Beebee, New York, circulation of hot water: Dec. 16.

James Maclean, Philadelphia, tubes for lamp wicks: Dec. 26.

Samuel Pierce, Peekskill, cooking stoves: December 6.

Saml. Myers, Schenectady, cooking stoves: December 31.

H Gatussonski and F P Wiezbicki, New York, stoves for fire places: Dec. 11.

C L H Webb, Lockport, portable stoves: Dec. 6; ante-dated August 30

Jas Montgomery, Memphis, steam boiler: December 26.

John Ericsson, New York, steam engine: December 20.

James Davis, Jr, Floucester, Mass., saddle and jaws for booms: Dec. 16.

James Maull, Philadelphia, sails for ships: December 11.

J. W. Wilson. Philadelphia, yard-trusses for vessels: Dec. 20.

Geo. W. Eddy, Waterford, railroad car wheels:

J. T. Craddock, Baltimore, filters and refrigerators: Dec. 31.

B S Benson, Harford, Md., hydraulic ram: December 26.

E W Ellsworth, East Windsor, Ct, water ram: December 6.

John Mecay, Millsborough, Pa., water wh : December 26.

Amos Linsey, Canton, Me, bark mill: December 26.

Robert Manck, Honeyville, Va, flour Bolt: December 26.

Josiah Platt, Bridgeport, grinding mills, &c.: December 26.

E Page, Barcelona, N Y, machine for turning cars, &c.: Dec, 20.

Joseph Magoun, East Cambridge, Mass, pressing glass in moulds, Dec. 6.

Walter Hunt, New York, inkstand: Dec. 11.

N B Jewett, Worcester, musical reeds: December 31.

Richard Hemming, Boston, cylindrical type-setting: Dec. 16.

L D Fleming, Newark, abdominal supporter: December 31.

Benjamin Sweet, Mount Morris, N J, medicated baths: Dec. 31.

A H Reiss, Baltimore: bathing apparatus: December 16.

John Allen, Cincinnati, teeth setting: December 16.

Allen Ward, Camden, NY, tailor's measure: December 26.

Wm W Woodworth, administrator of William Woodworth, planing machine: December 27.

THE SHELLS: A FABLE.—A father returned from the sea coast to his own home, and brought with him, for his son, some beautiful shells, which he had picked up on the shore. The delight of the boy was great. He took them, and sorted them, and counted them over. He called all his playfellows to show them his treasure; and they could talk of nothing but of the beautiful shells. He daily found in them new beauties, and gave each of them a name. But, in a few months, the boy's father said to himself, "I will now give him a still higher pleasure: I will take him to the coast of the sea itself. There he will see thousands more of beautiful shells, and may choose for himself." When they came to the beach the boy was amazed at the multitude of shells that lay around, and he went to and fro, and picked them up. But one seemed still more beautiful than another; and he kept always changing those he had gathered for fresh shells. In this manner he went about changing, vexed, and out of humor with himself. At length, tired of stooping, and comparing, and selecting, he threw away all he had picked up, and returning home weary of shells, he gave away all those which before had afforded him so much pleasure.

DIGNIFIED CONDUCT OF A YOUNG LADY.—Eliza Embert, a young Parisian lady, resolutely discarded a gentleman to whom she was to have been married, because he ridiculed religion. Having given him a gentle reproof, he replied, "that a man of the world would not be so old fashioned as to regard God and religion." Eliza started—but on recovering herself, said, "from this moment when I discover that you do not respect religion, I cease to be yours. He who does not love and honor God, can never love his wife constantly and sincerely."

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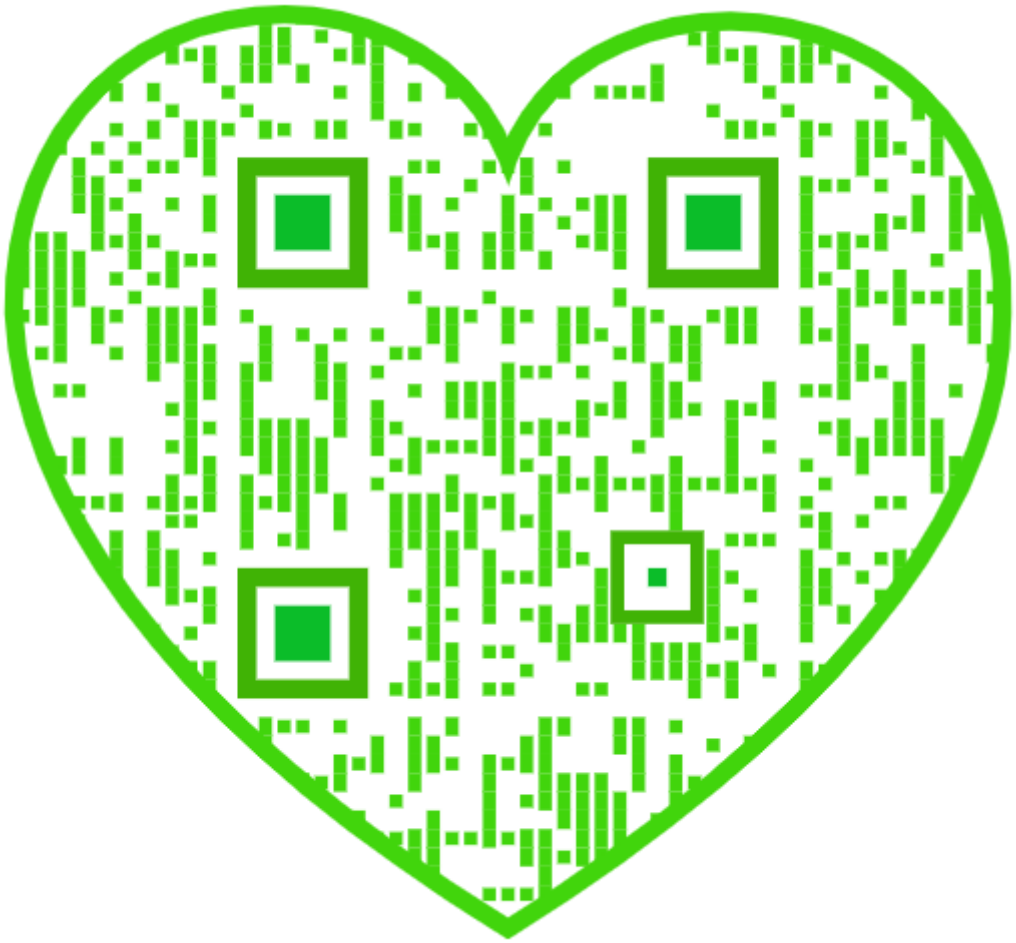
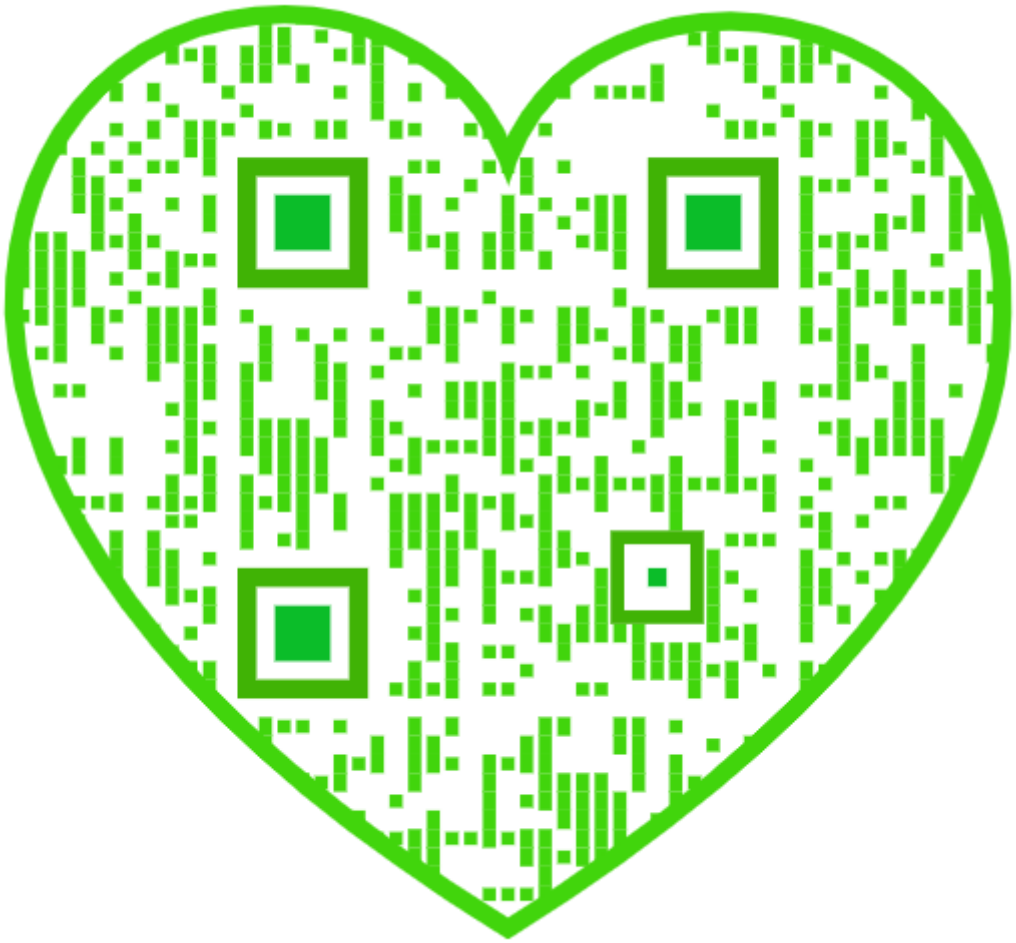




SCIENTIFIC AMERICAN

NEW-YORK, THURSDAY, JUNE 4.

Drawings of machinery, engraving on wood, and lithographic drawings, neatly executed, at the lowest prices, at this office.

POST MASTERS—Who receive this paper, will confer a special favor by mentioning the subject occasionally to scientific mechanics.

EDITORIAL CORRESPONDENCE.

No. I.

To the Scientific American.

WASHINGTON, May 28, 1846.

DEAR SCI,—Although my route from New York is a popular thoroughfare, and travelled by thousands every month, yet it may be interesting and useful to your readers to learn something of the present facilities and accommodations by the way, as well as of the noticeable improvements. I took passage in tne Amboy and Camden line, at 7 A. M., on Wednesday, and arrived at Philadelphia after a pleasant ride of five hours. Having frequently travelled on the upper route though Trenton, I have no hesitation in recommending the Amboy line in preference; the boat and cars are in good style, and the beauty of the scenery is decidedly preferable, to say nothing of the difference in the price. At 3 P. M., proceeded by the steamer Robert Morris on the Newport line to Baltimore. This route is also entitled to a preference over the upper route by railroad. The boats and cars are excellent, the officers and conductors polite and accommodating,and there are less detentions and vexations than on the upper line. We arrived at Baltimore about 9 o'clock. The evening was dark, and we should not have been able to examine the scenery on our approach to the city, but for the favor of vivid flashes of lightning in quick succession, which revealed to our view, the buildings and scenery on shore, more splendid in appearance than it could have appeared in any other light. The improvements in this city within the last ten years, surpass those of New York, Boston, or Philadelphia: the streets are in good order, many of them new, and lined with new houses in good style: some of them are on ground which a few years ago was covered with marshmud and stagnant water. The suburbs of this city, on three sides, are unsurpassed in beauty; most of the streets terminating in high swells of land, covered with heavy oak and hickory groves, rich and well cultivated fields of various kinds of produce in a forward state, and interspersed with elegant shaded mansions: and the beauty of the scenery is not marred by the hateful appearance of prisons, slaughter-houses nor distilleries. A spacious reservoir is being constructed in the northern limits of the city for supplying the city with good water. I have taken a brief view of the several monuments for which this city is celebrated, but shall not describe them in this letter. I find several railroad tracks, running in various directions through the streets, and centering at one general depot, in the immediate vicinity of which are several well furnished hotels. This is as it should be; and travellers can peaceably pass through, without being insultingly jolted and tilted about the city by saucy hack and cab drivers. I repaired to the depot this morning, twenty minutes before the time of starting, but found a long train of long cars filled to overflowing, and although a second train was preparing to proceed in a few minutes, about fifty gentlemen preferred to form themselves into "standing committees," on the several platforms. Between Baltimore and Washington there is nothing remarkable except an abundance of good looking land, uncultivated and neglected, and many houses, old and out of repair. On arriving at the depot in Washington, the passengers had some difficulty in regaining possession of their trunks, &c., the baggage platform being surrounded by a dense crowd of colored men and boys, who claimed the privilege of portering every trunk and velise before the owner should get possession thereof. After calling on a few friends I proceeded to visit the principal attraction—the National Fair. I found the extensive halls well thronged with visitors; but I shall defer any further, or more particular notices till my next.

With due regard. I remain, Dear SCI,

Your affectionate, EDITOR.

THE STEAM-SHIP GREAT BRITAIN.—This mammoth steamer arrived on Saturday morning, 20 days from Liverpool. Her propellers have been remodelled, but there apears to have been no improvement in her speed. It is truly astonishing that men of capital in England persist in keeping themselves so totally ignorant of the plain philosophical principles of Mechanics, as to suppose that a propeller of any form on the screw principle, can compete with the simple Fultonian paddle-wheel. It has already cost the proprietors of the Great Britain $75,000 to establish by experiment a fact which every intelligent boy of fifteen, should know from the exercise of reason alone.

PATENT AGENT AND ARTIST.—To those who may have occasion to visit the city of Washington for the purpose of applying for patents for new inventions, and have occasion for drawings and specifications, we would recommend Mr. Z. C. Robins, whose office is in the brick building on F street, opposite the East wing of the Patent Office.

CHEAP POSTAGE TO CONTINUE.—The Chairman of the Committee on Post Offices and Post Roads in the Senate declared, in his place on Tuesday, that no change was contemplated in the Rates of Postage. This announcement will be received with general satisfaction in every part of the country. Our Post Office law, when next altered, will no doubt be so amended as to make Postage still cheaper.

Editorial Correspondence.

No. II.

WASHINGTON, May 29, 1846.

DEAR SCI.—My last letter left me amongst the buzzing machinery, splendid show-cases, monuments of manufactures and gay admiring throng of the National Fair. There is not so great a variety of operating machinery, as has been seen at some of the fairs of the American Institute; but the samples of all that is elegant, excellent and useful of American manufactures, surpass in variety and quantity, any thing hitherto witnessed on this continent. To notice one-twentieth of the articles exhibited, would be a task far beyond my present convenience or inclination. But of those which were most interesting to me, in particular, I may mention first, the steam-engine by which the operating machinery is driven. It was built by Pool & Ferguson, of Baltimore, rated at about 20 horse-powers, and furnished with steam by an upright boiler. The principal peculiarity about it, is its superior style of finish, and the smoothness of its noiseless operation. There is not the least puffing, clattering nor jar; and a person might stand within a few feet without knowing whether the engine was in operation. An excellent loom and spinning-jenny are in operation, but being of common classes, they excite but little attention. Near them is a curious machine for combing and spinning hemp, forming it into uniform rope-yarns by one simple operation. This machine was invented or exhibited by Moses Day, of Roxbury, Mass., and not only displays much scientific ingenuity in its construction, but excites admiration by the perfection of its straightforward self-regulating operation. Benson's "Water-ram" is here in full operation, and I have finally got a clue to its principle of action; but I shall defer a description till I can procure an illustrative cut. A rotary bellows, or blowing-wheel for furnaces, by Tayman & Brown, of Washington, performs well, and blows a steady and strong blast. This is constructed on a correct principle, and will supersede several kinds of blowers in present use. After examining this machine my attention was called to a little apparatus of the most simple and most useful construction, and one that must come into extensive, not to say universal use—the Diaphragm Filter, invented and manufactured by W. H. Jennison, of New York—it is compact, neat and cheap; but will readily and effectually purify the Croton or other water from all impurities, animate or inanimate, with which all river waters abound. I have engaged one for the office hydrant, and shall soon be ready to invite people to call and examine its utility. Among the operating machines, one of the first in importance, is Mr. E. Howes' Sewing Machine. This machine, though not complicated, performs wonders. It will sew straight or curved seams with equal facility, and as rapidly as nine tailors, while the seams thereby produced, (and of which we secured a specimen) are superior in strength and regularity, to anything that can be done by the ordinary needle. Of agricultural machines, the greatest variety is exhibited by J. Murray, of Baltimore. Among these is a corn-shelling machine which excells all others in the perfection of its operation. It is calculated to be worked principally by hand, and not only shells rapidly and thoroughly, but by means of an ingenious but simple appendage, it separates the cobs and chaff from the clean corn. It is probably the *ne plus ultra* in that line. The "Universal Adjustable Cultivator," recently invented by Mr. Wm. Disert, of Gettysburg, Pa., meets with unusual commendation, and the inventor has rejected several extravagant offers for the patent right for certain territories. It is so constructed as to be susceptible of a variety of different forms, adapted to different kinds of work. I shall not attempt a particular description, but may procure a set of engravings representing its various modifications. A fire-engine, built by F. Davis, of Baltimore, excels in elegance anything of the kind I have ever examined. Of the most splendid manufactured articles, I would briefly notice the unequalled glass-ware, by the Flint Glass Company, of Brooklyn; clock-springs by Prenot & Co., of Philadelphia: cutlery by Pratt, Ropes & Co., Meriden Ct.; bank and door-locks, by E. Robinson, of Bostpn; wood-screws, by the N. E. Screw Company, Providence, R. I.: nails by Pratt & Brothers, Baltimore: box rules, by W. Thrall, Hartford, Conn.: Brussels carpeting, by J. Rosincrant, Phil.: muslin de laines from the Bristol print-works, Taunton, Mass., also from Hamilton print-works, Southbridge, Mass. Calicoes, splendid assortment, from the American print-works, Fall River, Mass. Kumbel's patent leather machine-belts, manufactured at 33 Ferry st., New York, are an object of particular and deserved attention. With this brief account of the articles of exhibition, I close the present.

Your, as ever, devoted—

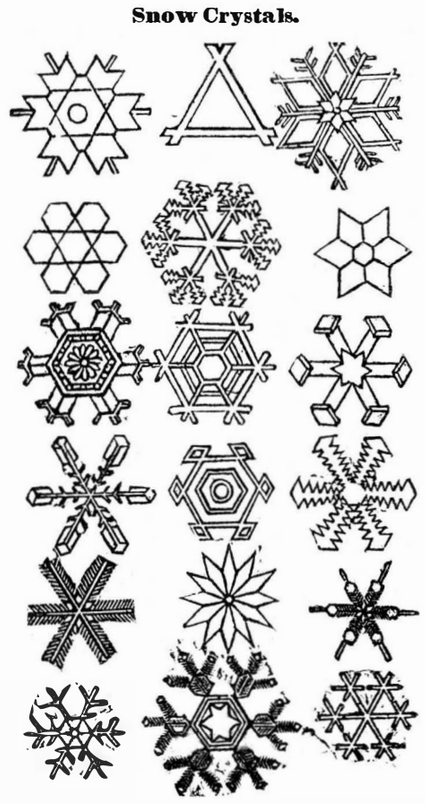
ED.

NEGRO INSURRECTION.—Some of the Southern sections appear to be subject to a state of constant anxiety and alarm. A late Cincinnati paper has an extract of a letter from Pensacola of May 9th, as follows: "Last night was an anxious one, with us; a woman told her mistress, that the *servants* were determined as soon as a sufficient number of white men went off to the war, (Mexican,) they would rise, burn the town and destroy all the white women and children. The citizens were out all night patroling; they have put one of the negroes in jail. There is great excitement, and every exertion is made to find out the truth of the story. Every body is armed, and some of the ladies are so frightened that they keep pistols loaded.

No Go.—The subject of reducing the expenses of Government was discussed in Congress last week, and the reduction of the salaries of various offices was readily agreed to: but when the proposition was made to reduce the pay of members to six dollars a day, it was unanimously rejected.

A GIANT FAMILY.—We are informed that the Scotch giant whose height is 7 feet 6 inches, with his wife, whose height is 6 feet 6 inches, has settled n a farm in Illinois.

Snow Crystals.



Millions have felt their hearts expand with adoration, towards the Creator, while examining and admiring the formation, diversity, and fanciful arrangement of the delicate tints of various flowers and blossoms; yet no less wonderful and beautiful are the arrangements of particles in the crystaline formation which constitute the flakes of falling snow. Several of these crystals are correctly delineated and represented in the above cut, as they appear when examined through a microscope, or powerful magnifying glass. When water in a still pond is cooled to the temperature of 32 degrees, it begins to freeze by shooting into crystals, which always cross each other at angles of 60 degrees, or one-sixth of a circle. Snow consists of similar crystals, but formed in the air by spontaneous arrangements of particles of frozen vapors. The crystals are of regular figure, principally of stars of six points, consisting of pure transparent ice. Upon each of these points, are other collateral points, set at the same angles as those of the central figures—the angles of sixty degrees. Several of these crystals combining, constitue what are called snowflakes. Nearly a hundred varieties of figures have been discovered in snow crystals, in each of which prevail a regularity of form sufficient to repel the idea of its being a mere work of chance.

The "Rancheros" of Mexico.

It will have been observed in the statements that have been put forth relative to the *materiel* of the Mexican armies, that mention is often made of the troops styled *Rancheros*. This is an appellation derived from their occupation and mode of life, and is common to a similas class of men who subsist on the pampas of South America. Half Indian and half Spanish in their extraction, gaunt shrivelled, though muscular in their frames, and dark and swarthy visaged as they are, these men are the Arabs of the American continent. Living half of the time in the saddle, for they are unrivalled horsemen, with lasso in hand,they traverse those vast plains in search of the Buffalo and wild horse which roam there in countless herds. The killing of these animals, and the preparation and sale of their hides, is the sole means of livelihood, other than occasionally lending a helping hand to some of the partizans in the civil wars that are continually being waged around them. Their costume generally consists of a pair of tough hide leggins, with sandals of the same material, bound together with leather thongs, over which is a blanket with a hole in the centre large enough to allow the head to be thrust out, and which falls not ungracefully over their shoulders, leaving ample room for the play of their arms. Add to this a broad straw *sombrero*, and the lasso hanging ready for use in his girdle, and you have the *Ranchero* as he appears in the time of peace, or in the pursuit of his occupation. Join to this a long lance with a sharp spear-head ornamented with a strip of red bunting, on a horse as savage and as unmanageable as himself, and his belt plentifully supplied with pistols and knives, and you have the *Rancheros* as a member of a troop of banditti, as a soldier in a body of Cavalry. Cowardly as they generally are in the open field, yet in a conflict among the chapparels of Mexico, or in an ambuscade, they are indeed a formidable enemy. Their power of enduring fatigue is almost inexhaustible, and a scanty meal per diem of jerked beef and plaintain suffices them during months.

Such are the *Rancheros*; and under disciplined conrol, they would be rendered the best light troops in the world. These are the men who comprise the great body of the Mexican cavalry, and they are to the armies of that nation what the Cossacks are to the Russians—ever on the alert, never to be surprised, and untiring in the pursuit of the foe when plunder, no matter how trifling, is to be obtained.

Ex. paper.

COPPER.—A letter from a gentleman visiting Lake Superior, says that the large piece of pure copper found by the Eagle Harbor Company, 'has been uncovered 50 feet in length, and has been struck again 36 feet in advance of that. At its thickest part it is 2 1-2 feet—its depth has not yet been found.'

BREACH OF TRUST.—A new law has recently gone into effect in this state, authorizing the punishment by imprisonment of all agents guilty of retaining money collected for others.

THE NORWAY ADVERTISER, is the title of one of the brightest and best papers on our list, though published among the bushes, away up in Oxford county, in Maine. We have been there.

Editorial Correspondence.

No. I I.

WASHINGTON, May 30, 1846.

BELOVED SCI. AM.,

This being the last letter I shall be able to write you prior to your going to press, and forthwith exposing this entire correspondence to a curious and criticising world, I shall speak briefly on a variety of subjects, and such only as are not already known to all, nor particularly interesting to any. Last evening, by invitation, I attended the brilliant and mysterious exhibition of Mr. Winter's dissolving, reviving, and changing panoramic scenery, which excels in the perfection of perspective, and fairy illusion, any thing hitherto produced. A more full description might be interesting, but must be at least deferred for the present. During the day I have visited the Capitol, General Post Office, Patent Office, the offices of the War and Navy Departments, and the rooms of several principal artists. Near the Capitol I met with a batallion of new recruits, marching in good order, and a finer corps of healthy and intelligent looking young men have seldom seen, even in the ranks of the first companies of disciplined infantry. In the gallery of the House of Representatives I remained long enough to hear the prayer of the Chaplain, the reading of the proceedings of the day previous, a variety of desultory conversation, and part of the speech of Mr. Burt, of S. C., on the appointment of a committee to visit the military academy of West Point. At the General Post office, by the politeness of a gentleman who occupies an important place in the department, I was shown the process of several branches of the business thereof, and was agreeably surprised to find such perfect order and regularity in every branch, yet without the least appearance of constraint; all appeared to move with freedom and voluntary harmony. In the Dead Letter Office, valuable letters containing various sums of money from one to one hundred dollars each, are constantly accumulating; many thousands of dollars now on hand, are carefully preserved in the original letters, awaiting the applications of the proprietors thereof. Besides money, there are bushels of jewelry, crucifixes, beads, relics, and other trumpery, on some of which the postage would amount to twenty times the value of the contents. One letter, we observed, contained a handsomely bound bible, which, having been rejected or neglected by the presentee, had thus literally, become a "dead letter." One thing I noticed, and which will be gratifying to many an anxious fair one, whose delicate and affectionate correspondence has failed of reaching the person addressed; namely, that the contents of dead letters *are never read* by any person, but merely opened, thrown aside and destroyed. In the Patent Office, the thousands of well finished models of machinery, and tens of thousands of natural and artificial curiosities, are tastefully arranged in tiers, in glass cases, and may be viewed to the best advantage, without injury, by the multitudes of visitors. The business of this department is managed in the most perfectly regular, and satisfactory manner; and under the revision of the Patent Laws, advocated by the present scientific and highly respected Commissioner, this department will become more than ever the nursery of our national prosperity. But as I find my sheet fast filling up I must improve in brevity. I engaged an artist of first-rate ability, to furnish you with weekly notices, and occasional sketches of the most interesting new inventions that may be presented at the Patent Office. After a brief call at Plumbe's Daguerrian Gallery on Pennsylvania Avenue, and under the superintendance of the ever gay and polite Mr. C. H. Brainard, I took a stroll to the planing-mills, now owned and well improved by your gentlemanly friend and agent, Mr. W. H. Ward, formerly of the Patent Office, and to whose politeness I am indebted for much of the pleasure and intelligence of my visit in the city. I may be excused in mentioning as an instance of good taste, that this gentleman has recently taken a spacious and pleasantly located lot near the waterside, and has erected thereon a very neat cottage dwelling, with a flower garden in front, well stocked with rose-bushes and a choice variety of other flowers: the location being but a few hundred feet from the mills where he has the pleasure of witnessing the operation of the various improved machinery. Well,—I must close: but may give a confidential hint, that if by various business engagements in this and other cities, I should be detained some days longer, it is possible that you may be allowed to omit one of your weekly circulations and lay by till the 18th; but with the prospect of then appearing refreshed, improved, and more than ever interesting. No more at present from your affectiodate and ever mindful

EDITOR.

READY PATRIOTISM.—The volunteers in the city and state of New York are so numerous, that it is found difficult to select the required seven regiments from the many who are anxious to march.—In Georgia it is said that the required regiment might have been readily obtained in Savannah alone. In Mississippi, twenty or more companies had volunteered before the President's requisition was received. In Tennessee several regiments were ready for the orders. Kentucky had mustered more than double the forces required before the requisition was received. In Ohio, more than ten times the number required, offered themselves. In Alabama the rush of volunteers was so great, that orders were given for their subsistence till advices were received from the War department. One officer has applied for permission to raise a regiment from Mobile alone. From all these indications it appears likely that if Mexico was about ten-fold stronger, than it is, quite a popular brush might be reasonably expected.

TEXAN NAVY.—The Texan navy, consisting of the sloop of war Austin, 20 guns; the brigs Archer and Wharon, 18 guns each, and the schooner San-Barnard, mounting six 12 pound carronade and one long 9 pounder, was transferred on the 11th ulto. to Governor Runnels, U. S. Commissioner.

VARIETY

The evening passenger train from Boston, on Tuesday, made the passage from Worcester to Springfield, a distance of 54 miles, including all the stops, in one hour and fifty-one minutes.

The Boston and Springfield telegraph was lately struck by lightning which ran along the wire some distance, broke three glass knobs, and splitting one of the poles, passed to the ground.

Upwards of one hundred and thirty steamboats, propelle rs, brigs, and schooners, arrived with cargoes at Buffalo, last week, within the time of 48 hours. That looks like brisk business.

A large company of emigrants who had just commenced their journey from Missouri to Oregon, on hearing of the war immediately resolved to shape their course for California.

The Boston Water-Commissioners have secured a site for a reservoir, of 18,000 feet on the high land near the State House. It is to be supplied from Long Pond, in Framingham.

The land of France is said to be owned by about 20,000,000 of peasants who cultivate it, while that of England is held by only 32,000 who *get it cultivated.*

Capt. May, who captured Gen. Vega, is one of the six sons of Dr. May, of Washington, each of whom stands six feet four inches in his shoes—just 38 feet in the aggregate.

The Legislature of Louisiana has passed a bill, making an appropriation of $200,000, for the facilitation of the forwarding of troops and other war preparations.

The Union Bank of Tennessee has offered the Governor $100,000 to aid in sending on the Tennessee volunteers. There is an unusual liberality and unanimity on this occasion.

It is contemplated to establish an observatory at New Orleans, which is said to be farther south than any observatory in the world, except that of the Cape of Good Hope.

The Norwich and Worcester Railroad Company have reduced the fare on that road from $2 to $1,50, and will without doubt find themselves the gainers thereby. That is the best route to Boston.

The form in which the Oregon Notice was passed by the U. S. Senate, is highly gratifying to the people of Great Britain, and is expected to ensure a speedy adjustment of difficulties.

There are reported to be 1,500,000 muskets in the various armories of the United States, all ready to load and *shoot.* They will probably be superseded by something better.

The first military company in Massachusetts, which voted to tender their services to the Government, in the Mexican war, was the Lowell Mechanic Phalanx.

It is reported that several sailors have deserted from the British merchant ships in New York, on account of the apprehension of war, and consequent impressment into the naval service.

It is stated in the Washington Union, that the value of property owned by Americans in the Island of Cuba is thirty-five millions of dollars. The statement appears extravagant.

A politician lately remarked that he wished the ladies could have the privilege of voting, because it would render the business of electioneering *so very interesting.*

Why are modern ladies like the lilies of the field? Because they *toil* not, neither do they *spin*—yet Solomon, in all his glory, was not arrayed like one of them.

The Charleston, S. C., Transcript speaks in high commendation of the courage and good sense of Gen. *Quattlebum.* He must be courageous to march under such a name.

Mr. Pakenham has bought the suit of chamber-furniture, exhibited at the National Fair, and valued at $8,000:—he being unmarried, the circumstance excites sundry conjectures.

Edward Webster, youngest son of Hon. Daniel Webster, has arrived in Boston to raise a company of volunteers for the Mexican campaign. He will find plenty of volunteers ready '*cut and dry.*'

Within two days after the Governor's military orders were issued in Connecticut, double the required number of volunteers were reported as ready for service. No want of patriotism there.

It is reported that the Mayor of Albany persists in granting licenses, notwithstanding the voice of a large majority of the people against it. He will find it 'up hill work.'

The largest canal in the world is in China. It was constructed in the tenth century, is two thousand miles long, and passes through, or near, forty-one cities.

England, though less in extent than one of our largest States, contains 2,800 miles of canals, 2,500 miles of navigable rivers, and several thousand miles of finished railroads.

It is said that Gen. Scott highly approves of the course adopted by Gen. Taylor in marching from his camp with two-thirds of his force, in order to open a communication with Point Isabel.

Hail stones, each six inches in circumference, fell in Schuylkill Co., Pa., on Saturday week, destroying the crops and some window glass in that county.

The coal trade over the railroad from the Schuylkill region, amounts to about 30,000 tons per week on an average. Last week it was 33,000 tons

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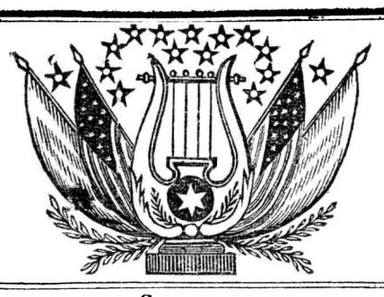


Song.

Life is like a boat,
Rowing—rowing
Over a bright sea,
On the waves to float,
Flowing—flowing
Away from her lea.

Up goes the sheet!
Sailing—sailing,
To catch the rising breeze,
While the winds fleet,
Wailing—wailing,
Sigh o'er the seas.

She darts through the waves,
Gayly—gayly,
Scattering the foam.
Beneath her, open graves,
Daily—daily,
The blithest to entomb.

Who heeds the deep,
Yawning—yawning
For its destined prey,
When from night's dark sleep,
Dawning—dawning,
Wakens the bright day?

Away, o'er the tide!
Fearless—fearless
Of all that lies beneath;
Let the waves still hide,
Cheerless—cheerless,
All their stores of death.

Music of the Soul.

There's music in the howling storm,
That wakes the slumbering seas;
Sweet music floats among the stars,
And murmurs in the breeze;
It breathes a ceaseless evening hymn
O'er mountain, hill and dale;
And when the sun has sunk to rest,
Inspires the nightingale;
But o'er the music of the storm,
That wakes the slumbering seas—
Above the music of the stars,
That murmurs in the breeze—
Or sacred hymns that gently floats
O'er mountain, hill, and dale—
And when the sun has sunk to rest,
Inspires the nightingale—
A sweeter—lovelier—holier strain,
Yet greets the *listening* ear;
And sings of life—of joy and love,
Beyond ihis mundane sphere;
It fills the earth, the air, the sky,
Each blossom, flower and rill;
And to our earth-born passions, ever
Whispers—"Peace! Be still!"

Summer is Coming.

Summer is coming—and with a glad shout
All nature is hanging her drapery out;
The forest and valley, the mountain and hill,
Are sining in concert with river and rill.
The bird in the tree-top, its mate in the glen,
And the winter-bound spirits of wearied men
Alike are rejoicing its coming to see,
As it throws its rich mantle o'er valley and lea.

Summer is coming—and like a rich vest
The earth in an emerald robe will be dressed!
All gemm'd with bright flowers of various light.
From the deep scarlet dye, to the pure pearly white;
And the sky with its pale and cold mantle of blue,
Will deepen its tint of cerulean hue,
And its light floating cloudlets of silvery white,
Will seem to shed o'er us a smile of delight.

Summer is coming—and winter is o'er,
And the voices of nature awakened once more
In a murmuring strain of sweet harmony blend,
And upwards from earth a rich orison send—
The murmurs of breezes, the songsters' wild notes,
The hum of the insects, which on the air floats,
And the voices of rivulets heard everywhere,
Make vocal with music the earth and the air.

DIMINUTIVE BOARDER.—A lady in New Haven keeps, or indulges a pet mouse, which comes down stairs regularly, when the bell rings for breakfast or dinner, and after feeding under the table, politely returns to his garret. He is said to be a very respectable mouse.

WEEKLY STEAM TO AMERICA.—The London Morning Herald announces that the government has completed a new contract with the Royal North American Steam Company, by which a steamer will leave Liverpool on each alternate Saturday for Boston and on the other Saturdays for New York.

HORSES FOUND—MISSING.—A gentleman writing from Austin, Texas, alluding to annoyance by the Camanches, says 'the owners of some fine horses, which had been staked out, upon looking for them one morning, *found one missing* and the other dead." The one first *found*, looks very much like a *bull*.

BUSTLES IN AFRICA.—A naval officer on the coast of Africa, writing from Axim, and giving an account of the inhabitants, says that the only garment worn by some of the Axim girls, is a huge bustle. Its native name is "tarb kospe."

Melancholy, or depression of spirits, is often considered a disease of the mind, though in most cases it proceeds from too high living and too little bodily exercise.

Arts and Trades, Railroad Intelligence, New Inventions, and Mechanical Movements, in our next. Inventors and correspondents will please be patient.

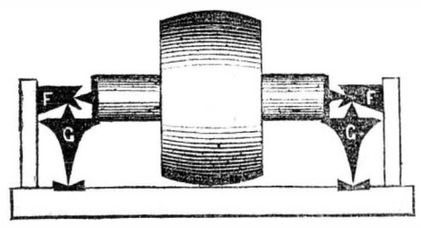
TEETH.—If parents would pay some little attention to their children's teeth, they would prevent a great deal of suffering to them in after life.

Very late from Europe.

The Royal Mail Steamship Hibernia arrived at Boston, on Monday, twelve days from Liverpool. The news by this arrival is not important, unless importance attaches to the calm and peaceable indifference, with which the movements in this country are regarded in England. It was understood in London that the Oregon question, was on the eve of amicable adjustment. Charles Dickens, who was said to have invested $100,000 in the establishment of a newspaper, has failed in the enterprise. Ibraham Pacha of Egypt is in Paris, where he receives marked attention. The Hibernia brought 54 passengers, among whom was Mr. W. W. Mesner, bearer of despatches from the Court of St. James. It is calculated that 30,000 emigrants, from Ireland, will have emigrated to this country this year.

Science of Mechanics.

(Continued from No. 37.)



FRICTION, &c.—Traction consists of the same resistance which produces friction. Traction prevents the peripheries of the wheels of a locomotive engine from sliding on the rails, and thus enables a locomotive to draw a train of loaded cars. When steam power was first introduced on railroads, considerable doubt and anxiety prevailed on this subject, and various plans were invented and patented for preventing the sliding of engine wheels on the rails; but all those inventions have been rendered useless by the developement of the important fact, that the public had no occasion for them. There has been a few instances in which, by the carelessness of the engineers, the rails have become so smeared with oil, that the wheels of the engines have slid on the rails; but this has occured only at the oiling places on the road, and is readily remedied by lime, ashes, or alkali of any kind. The force of traction, so called, has often been applied to the purpose of driving drums and pulleys in machinery, and in many instances answers a better purpose than either geer-teeth or belts. The motion of machinery may be more readily attached or detached by means of traction than by any other method, and is at least as free from friction as any. In some of the early writings on the subject of railroads, a resistance was designated as the "Friction of rolling bodies," but facts have been substantiated by experiment and observation, proving that there is no such thing as either friction or resistance between a rolling body, and a plane surface, nor between the peripheries of two perfectly circular revolving bodies. There is, indeed, a slight and almost imperceptible resistance, occasioned partly by atmospheric air, in escaping from between the two surfaces, and partly by the electric fluid which pervades all bodies, and resists a positive and actual contact; but neither of these can with propriety be brought into account in ordinary calculations of resistance to mechanical motion.

We have here presented a plan for reducing the friction of a bearing, by means of a single cone G; a band or flanch, on the end of the shaft, rolls on the head of the cone, near its periphery. In this case, the surfaces of both the cone and flanch or shaft, which come in contact, should be a little bevelled, to prevent the tendency which the weight of the shaft would otherwise have, to draw the cone towards it. The angle of this bevel should be equal to half of that of the side of the cone. This end of the shaft, as also the head of the cone, terminates in small conical points, which are governed by a concave box, which is supported by the projection F. When either of these plans are to be applied to car axles, the order or arrangement of the cones, are of course, to be inverted. In either case, the friction is reduced to a very small degree, insomuch that the strength of one man would be sufficient to propel 100,000 lbs. weight, when mounted on relief bearings of this kind on a level railroad. When the pincipal bearing of heavy machinery is on the point of a pivot, pressing endwise, the bearing is easily secured against wearing or chafing. There have been instances in which the pivot of a heavy vertical shaft has run for years, without any perceptible wear. There are several kinds of minerals, on which a hard steel point, will run without ever wearing away. Much has been said of ship canals, and much money has been expended in their construction in various plans: yet no one who has examined the subject, will doubt for a moment, that ships and vessels of any kind could be transported by railroads with much greater facility and with less than half the expense that is required to do it by canals. A car of thirty-two wheels,—four eight-wheeled cars combined—and running on a double track of four rails, would be capable of conveying any ordinary merchant ship or moderate sized frigate; and if the axle bearings were constructed on the principle above described, two ordinary locomotives would be able to propel the car thus laden, with a speed of 12 to 16 miles per hour. By an apparatus of this kind to run on a double track from Albany to Buffalo, our Government would be enabled to throw any number of light armed vessels into the lakes at short notice, whenever occasion should so require. The friction of machinery being once effectually avoided, the transportation of very ponderous bodies by railroads would become more general, and the expense of transportation proportionably diminished.

SERIOUS ACCIDENT.—A singular accident occurred at Waterford, N. Y., in one of the factories. The tongue of the belt, weighing four and a half pounds, fell a distance of sixty feet, directly on the head of Miss Mary Porter, making a hole in her head an inch in diameter. She fell immediately, surgical aid was called in, and her recovery, though doubtful, is possible.

Generosity of the Press.

[We cannot be contented to remain silent on the subject of the courtesy and generosity of our highly respected contemporaries, while they persist in laying us under perpetual obligations of gratitude; nor can we better express the extent of this obligation than by the insertion of a few extracts from their very flattering notices of this paper.]

THE SCIENTIFIC AMERICAN is one of the most truly valuable papers published in this country. It contains a large amount of reading matter, which is illustrated with correct drawings of New inventions, and labor and time and expense saving machines. The editor, Mr. Porter, is a scientific, as well as practical man, and the readers of his Journal are in no danger of being bitten by the false and foolish humbuggeries in the way of 'valuable receipts,' which frequently appear in other journals.—*Providence Transcript.*

A VALUABLE PAPER FOR MECHANICS.—We receive, among other exchanges, an excellent weekly journal, called the 'Scientific American,' edited by Rufus Porter, and published in New-York city. It is devoted to mechanical and other improvements, and is well illustrated with appropriate wood cuts. Our word for it, Pittsburgh mechanics will find it an agreeable and instructive paper.—*Iron City. (Pittsburg, Pa.)*

SCIENTIFIC AMERICAN.—This is a good paper—one of our favorites; and it seems to be a favorite with all who get a chance to read it. We have no desire, nor do we intend, to over-rate its merits; and in saying that it is one of the best papers in the country, justice only is rendered to the publisher. Our copy could not be purchased at any thing near the subscription price. It is a sheet that should be in the hands of every mechanic, and, in fact, of every person, who is desirous of obtaining, at a low rate, practical information of valuable character. A copy of the paper may be seen by calling at our office; and remittances to the editor will be cheerfully made.—*Democratic Pharos.*

AN EXCELLENT PAPER.—The Scientific American, New-York, $2,00 a year, edited by our friend Porter, is a sheet worthy of most extensive patronage. To the mechanic it is invaluable, and every shop should be cheered by its presence. Each number contains much scientific information, which could not be well otherwise obtained. How the publisher manages to get out so expensive a sheet for two dollars, is more than we can fathom.—*Oasis. (Nashua, N. H.)*

THE SCIENTIFIC AMERICAN.—We should deem ourselves recreant in our duty to a portion of our readers, it we neglected to inform them of the value of this newspaper; devoted, as it is, to the interests and wants of the farmer and mechanic.—Among our list of exchanges, (and we have many excellent ones), there is none that we read with more pleasure and profit, than the 'Scientific American,' and we cordially recommend it to every one who desires a truly excellent paper.—*Schuylerville Herald.*

SCIENTIFIC AMERICAN.—We have before us the 31st No. of the 1st. Vol. of this paper. It is a sheet of fair size, published weekly at the Sun Buildings, 128 Fultonand 89 Nassau-st., New York, at $2 a year; $1 in advance, and $1 at the end of six months. Every number has from 2 to 5 original Engravings, illustrative of new inventions, Scientific principles, and Curiosities. The number before us contains the following engravings: Apparatus for Kyanizing Timber; one illustrating a Vacuum; Galvanism; the Lifting power; Improved acid Bottles; Mechanical Movements &c.; Dietz's improved Hames. The Mechanic's association in this place ought to have this paper, and also every operative mechanic who desires to be master of the science of his profession.—*Toledo Blade.*

☞A word to our mechanics. You are not doing your whole duty to yourselves in taking our paper, till you also subscribe for the Scientific American, a most ably conducted sheet, published at New York city, devoted exclusively to you and your interests. The farmer has his Cultivator, or agricultural work, the merchant his commercial Ledger, the lawyer his Journal, the physician his 'Lancet' or Medical Review, while you jog along without any thing. Call and examine the above paper.—*Bloomington Herald.*

SCIENTIFIC AMERICAN.—This valuable paper, published by Rufus Porter, New York, increases in interest and usefulness. Each number is embellished with large wood engravings of new inventions, and the reading matter is mostly original and well digested. The series of articles on painting are alone worth the subsciption price, especially to those mechanics who ply the brush. Mr. Porter certainly deserves a generous patronage and support.—*Susquehanna Register.*

☞ The 'Scientific American,' published by Rufus Porter, at the 'Sun buildings, N. Y., is an exceedingly interesting and valuable paper, that ought to be patronized by every mechanic in the Union. Price only two dollars a year in advance. —*Franklin Democrat.*

☞ The Scientific American, published in New York, is the best and cheapest paper devoted to mechanics in the Uuited States. No mechanic should be without it. The frequent selections we make from its columns, as seen in our Arts and Science department, show the estimate we place upon it.—*Germantown (O.) Telegraph.*

☞ The 'Scientific American,' published by Rufus Porter at the "Sun Buildings." N. Y. is an exceedingly interesting and valuable paper, that ought to be patronized by every mechanic in the Union. *Cheshire Republican.*

☞The Scientific American, published and edited by Rufus Porter, Sun Buildings, New York City, is one of the most valuable papers, for the mechanic and artizan which is issued in the country.—*Northampton Democrat.*

The Scientific American, published at New York, is the best paper devoted to the interests of Mechanics and Science that we know of. Each number contains several wood engravings, illustrative of some valuable principle of art. It is published at $2 a year. No scientific man should be without it.—*Iris.*

NAVAL.—The vessels built for the Mexican service, and purchased by our government, are armed for service, and have a heavy cannon midships on a pivot, with small guns. They are remarkably fast sailors, and will be valuable in shoal water, a class of vessels which we much want.

SUBLIME CALCULATION.—The voice of a locust can be heard one-eighth of a mile; and it is calculated that if a middling sized man had a voice as strong in proportion to his weight, he could be heard 2,773 miles. It is also calculated that if a man was as nimble in proportion to his size as a flea, he could hop more than twelve thousand miles; or about as far as from New York to China.—Should 'like to see 'em go it."

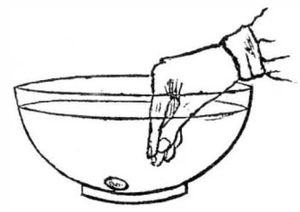
REVERSING.—Murmur reversed is rum rum.—Some people when they cannot get *rum rum*, are very apt to *murmur*.

Magnetic Telegraph.

We are gratified to be able to announce that the line of Telegraph between New York, (or Jersey City,) and Washington, is ready for opera
ter considerable delay having been occasioned by the difficulty of extending the line across the Susquehanna river. This has now been effected, by extending the wires six miles above the rail-road ferry, and crossing at the bridge. No method has yet been found, of extending the wires across the Hudson River, and the proprietors will probably adopt, eventually, the plan proposed by us some weeks since, of supporting the wires at a proper elevation, by buoyant revoloidal spindles, or balloons inflated with hydrogen gas. This is practicable, and will not be difficult.

Galvanism.

Continued from No. 37.



THE GOLDEN EAGLE.—The secondary current of electricity when passing through the arms or any part of the human frame, as described in our last number, produces a contraction of the muscles, insomuch that the subject is sometimes unable to let go the brass handle without help. It has been shown in a former number, under the head of electro-plating, that all saline solutions are ready conductors of electricity. The amusing experiment of the golden eagle is made by means of a strong solution of sulphate of soda, or sugar of lead, which being transparent will pass in appearance for pure water. A quantity of this solution is placed in a tin basin to which one of the wires of the second helix is attached; or the solution may be placed in a glass bowl, the bottom of which is perforated, and one of the wires of the helix inserted so as to come in contact with the solution inside; and this wire may be concealed by passing down through the table, and thence to the helix. The battery and electrotome then being put into full action, a golden eagle, or any other coin, is put into the basin, or bowl, and any person present may be invited to take hold of the one brass handle with his left hand, and with the right to pick up the coin from the bottom of the vessel; and a golden eagle has been offered to the person who would help himself to it from the bowl. This appears to the spectator to be a very simple task, for be it understood that no sensible effect is produced by the holding of the brass handle, until the hand comes in contact with the liquid: but the moment that the fingers touch the water, the muscles of the hand are so cramped or contracted, that the experimentor cannot possibly use either finger or thumb to grasp the money. If the experimentor merely takes hold of the hand of the exhibitor, while the latter holds the brass handle in the other hand, the effect is the same. One instance has been recently published, however, in which a strong nerved man succeeded in taking the eagle from a lecturer who was exhibiting this experiment at New Haven, Ct., but it is evident that there must have been some deficiency in the connection, or in the operation of the battery at the time.

(To be continued.)

GRAHAM'S MAGAZINE.—The June number of this popular work is splendid. The embellishments consist of a finely engraved view of Bedford Springs, by Ellis; and a plate of fashions in a style never excelled by anything of the kind. The many original articles by the most popular writers, are peculiarly interesting, and calculated to afford a rich treat to all lovers of chaste and elegant literature. It will be found at No. 90 Chesnut street, Philadelphia, and at the Tribune Buildings, New York.

BE ALWAYS KIND.—While you are young, learn this important lesson—engrave it on your heart, that you may never lose sight of it—*be always kind.* No matter how badly you may be treated, let this great lesson of wisdom be always before you. If observed, it will be more precious to your souls than you can conceive. It will lead you in the paths of peace, and pour into your bosoms copious streams of pleasure.

THE QUID PRO QUO.—A citizen of Cincinnati, some years ago, was taken prisoner by the Mexicans, who compelled him to work two years with a chain and ball fastened to his ankles, to keep the streets of Mexico clean. He finally got clear, and when beating up for volunteers lately in Cincinnati, he joined as a private soldier '*to obtain his pay for two years labor.*'

LIST OF LETTERS

Received since May 6, 1846.

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What is Faith?

To this important question,—once proposed by Pontius Pilate, but without obtaining an answer,—a variety of answers may be given, and all of them correct, in a limited sense; but it is beyond the power or wisdom of man to give an answer in full, or even to receive a full answer to the question, while veiled in mortality. We shall endeavor, however, to give some faint illustration, and if we should advance an idea which has not been generally published and understood, it will, as far as correct, be the more effectual. *Truth* is not restricted to conversation, or mere honest communication of facts; neither to an honest course and deportment in the business of the world. But in the sense in which it is most interesting to us, it consists, at least in part, in a capacity of feeling in accordance with rational evidence of facts. It is, or rather produces, rational feelings in the heart, in opposition to that depravity, usually called apathy, hardness of the heart, or insensibility to facts and circumstances, which are to us highly important, and in which we, as rational beings, should feel deeply interested. The effects of Truth, are peace in time of security; fear in time of impending danger, gratitude for favors received, abhorrence of that which is evil, love to that which is excellent, and sublime joy in hope under the rational evidence or prospects of future glory and blessedness. In the absence of Truth, though there may be extensive knowledge and rational conviction, there is no corresponding feeling: and it is a difficult task for a human being to follow the dictates of rational conviction,—a mere conviction of the head, without a corresponding feeling in his heart. Hence the propriety of the petition—'Sanctify them *through thy Truth:* thy Word is Truth.' The apostle John says: 'The Word was with God, and the Word was God.' The Word says, 'I am the Way, and the TRUTH and the Life.' It is thus clearly shown that Truth is Divine Life; —the Holy Spirit of Christ—and without this can no man be saved; for He says, 'No man cometh unto the Father but by me,' (the way.) But this Truth is attainable by men, for He says, again, 'If a man love me he will keep my words, and my Father will love him, and we will come unto him, and make our abode with him." All who would secure eternal life must strive to obey (not the vain traditions of the churches, but) all the commandments of Christ, and they will be blessed with the Living Truth, which is Eternal Life.

COMMIT THY WAYS TO GOD.—Reflection will teach a man that he should trust himself to some Superior Being; and reason unites with Revelation to tell us to commit our ways to the Lord. Human life is such a journey, that man needs a guide and provider. It is not in man that walketh to direct his steps. Men are entirely ignorant of the future; hence, since we know not what our circumstances will be, ourselves cannot form the plans which shall be best to be adopted. Every man may say in verity, thus far in life hath the Lord helped me. The great and blessed God has been our conductor, though unseen, and it may be unacknowledged. Ought we not then to acknowledge him and commit our ways to him. Time is an ocean, and each person's life a voyage. Its tossings and heaving, its tempests and innumerable perils, should plainly tell to each voyager that himself cannot steer his frail and tempest-tossed bark. He needs a pilot, if he would not dash amid rocks and quicksands. If he would make the port of safety, he needs a helmsman other than himself. Let him commit his ways to God. The world is a wilderness, a dark and thorny desert. Shall the traveller attempt to thread its wilds alone? Let him remember, it is not in man that walketh to direct his steps. He has not been the way before, and does he not need a guide? Fellow traveller, the only proper guide is God; to him let us commit our ways. Voyager, traveller, by prayer commit your ways to God.—Venture not alone upon such an ocean, through such a wilderness. Thou canst not guide thine own, thou canst not direct thy steps; every morning and evening ask wisdom of God. Tempt not the journey, try not the voyage, alone.—*Selected.*

TRUE. A very eminent writer has said, that although we seem grieved at the shortness of life in general, we are wishing every period of it at an end. The minor longs to be of age; then to be a man of business; then to make up an estate; then to arrive at honor; then to retire. The usurer would be very well satisfied to have all the time annihilated, that lies between the present moment and the next quarter-day; the politician would be content to loose three years of his life, could he place things in a posture which he fancies they will occupy after such a revolution of time; and the lover would be glad to strike out of his existence all the moments that are to pass away before the next meeting.

TOUCHING EXPRESSION.—A certain lady had two children, girls, both young, and nearly of the same age. But the elder by some whim or accident, possessed all the mother's affections, there was none for the younger, nothing but harshness. Very lately the mother fell sick, and was confined to her bed. While lying there, she heard gentle steps approaching it. 'Is that you, *my child?* said the sick woman. 'No, mamma,' neively and softly said the resigned one, '*it is me!*' Most parents and all mothers will understand this simple answer.

SLEEP.—Sleep has often been mentioned as the image of death: 'So like it,' says Sir Thomas Brown, 'that I dare not trust it without prayer.' Their resemblance is, indeed, striking and apparent; they both, when they seize the body, leave the soul at liberty—and wise is he that remembers both, and that he can be made safe and happy only by a living faith in Jesus Christ.

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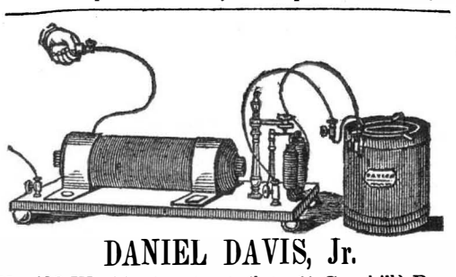

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N.B.—All letters directed, post-paid, to S. B. MERKEL, Founder-machinist, millwright, draughtsman and Engineer, Philadelphia. Pa. feb11.

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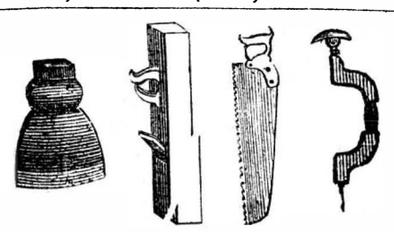
" Chicken,	18d	Veal Pie,	6d
" Duck,	18d	Beef Steak Pie,	6d
" Beef,	6d	Chicken Pie,	12d
" Pork,	6d	Mush and Milk,	6d
" Veal,	6d	Rice and Milk,	6d
" Lamb,	6d	Lamb Pot Pie,	6d
" Pig,	12d	Fried Fish,	6d
Boiled Chicken,	12d	Fried Clams,	6d
" Mutton,	6d	Ham and Eggs,	12d
" Corned Beef,	6d	Chicken Soup,	6d
" Pork,	6d	Beef Soup,	6d
" Fish,	6d	Coffee,	6d

Dessert.

Suet Pudding	6d	Mince Pie,	6d
Indian Pudding,	6d	Apple Pie,	6d
Rice Pudding,	6d	Peach Pie,	6d
Plum Pudding,	6d	lum Pie,	6d
Bread Pudding,	6d	umpkin Pie,	6d
Apple Dumplings,	6d	Custard Pie,	6d

Breakfast and Tea.

Beef Steak,	6d	Hot Corn Bread,	6d
Veal Pie,	6d	Indian Cakes,	6d
Mutton Chops,	6d	Boiled Eggs,	6d
Ham and Eggs,	12d	Fried Eggs,	6d
Fried Tripe,	6d	Toast,	6d
Fried Sausages,	6d	Hot Muffins,	6d
Fried Fish,	6d	Hot Rolls,	6d
Fried Clams,	6d	Tea,	3d
Fried Liver,	6d	Coffee,	3d



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Cabinet Trimmings. Tin and wooden ware.
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Sole Agents, for this city, for J. A. Fay's patent Morising Machine.

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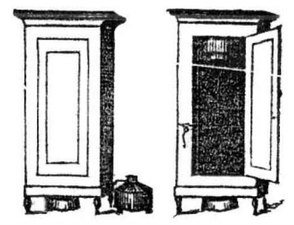
W. N. S. & Co. have taken the exclusive agency, for this city, of Ellis's Invisible Door Spring, which commands a ready preference over all others, and has made arrangements to have them put on and adjusted to the doors of those who may require them; Mr. Shaffer, 75 Warren st, is engaged to superintend this department, and will promptly attend to all orders in this line.

Dec. 25.



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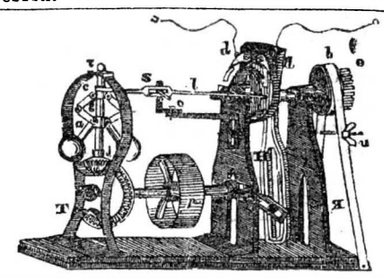

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